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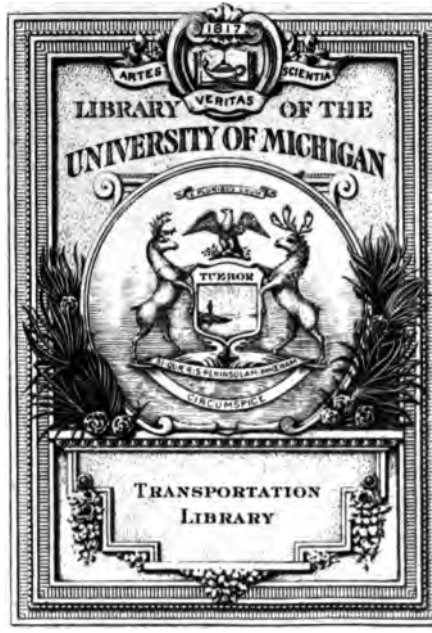
TABLES
FOR SETTING OUT
RAILWAY CURVES &c.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TABLES

FOR SETTING OUT CURVES

FOR

RAILWAYS, CANALS, ROADS, ETC

VARYING FROM

A RADIUS OF FIVE CHAINS TO THREE MILES,

EITHER WITH OR WITHOUT A THEODOLITE.

BY

ARCHIBALD KENNEDY

AND

R. W. HACKWOOD,

CIVIL ENGINEERS.

London:

JOHN WEALE,

ARCHITECTURAL LIBRARY, 59, HIGH HOLBORN

M.DCCC.XLIX.

report.

TO

)MAS PAGE, Esq., Civil Engineer,

ETC., ETC., ETC.,

These Tables,

IGNED FOR THE USE OF MEMBERS OF THE PROFESSION,

ARE INSCRIBED,

HIS OBLIGED FRIENDS AND PUPILS,

THE AUTHORS.

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EXPLANATION OF THE TABLES.

THE acknowledged importance, or rather necessity, of accuracy in the methods by which railway curves are set out upon the ground, has occasioned the production of several works upon the subject, describing, in a more or less practical manner, those methods which experience has shown to be the easiest applied and the least liable to error. Although, however, these works contain perhaps all that could be desired as to the *modus operandi*, and give ample and explicit rules for the calculation of the various dimensions required to be known previous to commencing operations in the field, they leave undone the most tedious process of the whole, that of *making these calculations*, and the one of all others most liable to error.

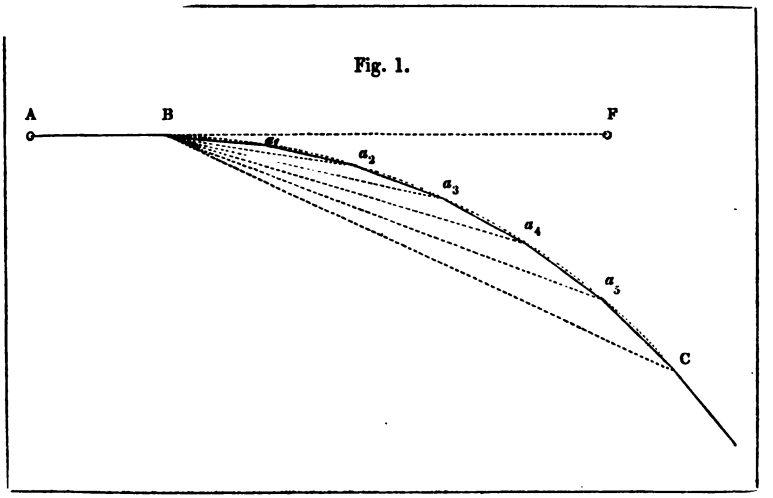
It is to supply this want, and to fill up the only gap which had been left for the entrance of error and uncertainty, that the

present Tables have been published. In the first instance they were calculated for private use, but the above considerations have induced their publication, in order that the Profession generally may participate in the facilities which they afford for the setting out of curves for railways and other purposes with certainty and expedition.

The Tables contain, ready calculated, all the dimensions required for setting out curves varying from a radius of five chains to three miles, according to either of the three most generally employed methods of performing the same.

The first method, which requires the employment of a theodolite, is that which was suggested by Mr Rankine, and is exhibited in figure 1, in which A B represents the straight portion of the line, and B C the curve required to be set out; B being the commencement of the curve, and a_1, a_2, a_3, &c., successive points in the same at the usual distance of a chain, or sixty-six feet apart. The theodolite must first be put up at the point B, and having been properly levelled and set to zero, the telescope must be directed to F, the continuation of the straight portion of the line and the tangent to the required curve; in this

Fig. 1.

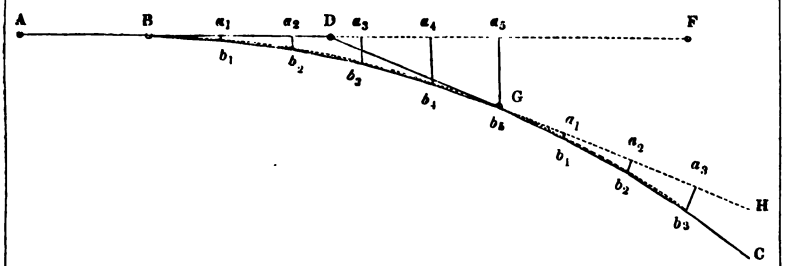


position the lower plate must be clamped, and the vernier set to the angle found opposite 1 chain in the column headed 'Angle β' for the required radius, which, taking as an example 20 chains radius, would be $1^\circ\ 25'\ 57''$, the telescope will then point in the direction of the first peg, the exact position of which is determined by measuring a chain from the point B in this direction; the vernier must then be set to the angle opposite 2 chains, in the case supposed $2^\circ\ 51'\ 54''$, when it will point in the direction of the second peg, which must be driven at a distance of 1 chain from the last: in like manner, the vernier of the theodolite being successively placed at the angles contained in the Table, and the distance of a chain set off each time, any number of points may be determined as far as the angles are calculated in the Table. Should, however, a greater number of points be required, or should any obstacle render it necessary to remove the theodolite, it may be set up again at the last peg, the position of which has been determined, and a staff being put up at the most distant back peg in the curve which can be seen, look in the Table for the angle β opposite the number of chains which intervene between the instrument and the staff;

subtract this from 180°, and set the vernier of the theodolite to the angle thus found; having done which, direct it to the back staff, and unclamp the instrument, when the continuation of the curve may be set out in the same manner as was done before, the telescope being in the direction of the new tangent line when the vernier reads zero. For example, in the present instance we have a radius of 20 chains, and suppose that some obstacle prevented more than 8 chains of the curve being set out from B; set up the theodolite at the 8th peg, and a staff at B, look in the Table opposite 8 chains for the angle $\beta = 11° 27' 37''$, which taken from 180° leaves 168° 32′ 23″, —the angle to which the vernier must be set; then direct the telescope to the staff at B, unclamp the lower plate, move the telescope until the vernier reads 1° 25′ 57″, and the instrument will point in the direction of the 9th peg. To find the direction of the tangent to the curve at its termination C, the theodolite must be put up at that point, and the vernier set as though the curve were to be continued in the manner just directed, the instrument then being brought to zero, the telescope will point in the direction of the required tangent.

The second method does not require the employment of a theodolite; it is shown in fig. 2, and consists in determining the position of each point required in the curve by measuring its distance from that last determined, and from the tangent line, the first distance being always a chain, and the latter found for the required radius in the column headed 'Offset' in the accompanying Tables. Thus let us suppose that it is desired to set out by this method a portion of a curve, having a radius of 25 chains. Let B be the termination of the straight portion of the line A B, and B F (its continuation) the tangent line from which the offsets are to be measured. Put up at B, and at some point (A) in the straight part of the line (the more distant from B the better), two staves; then from B measure a chain's length, as nearly as can be guessed, in the direction of the curve; having done which, place a staff at a_1 on the line B F, opposite the end of the chain; (which may be easily done by looking back at the two staves at A and B, and moving that at a_1 until it is in the same line;) then look in the Table for the offset for the first chain, which is 1 foot 3·8 inches, and move the end of the chain (b_1) until it is this distance from

Fig. 2.

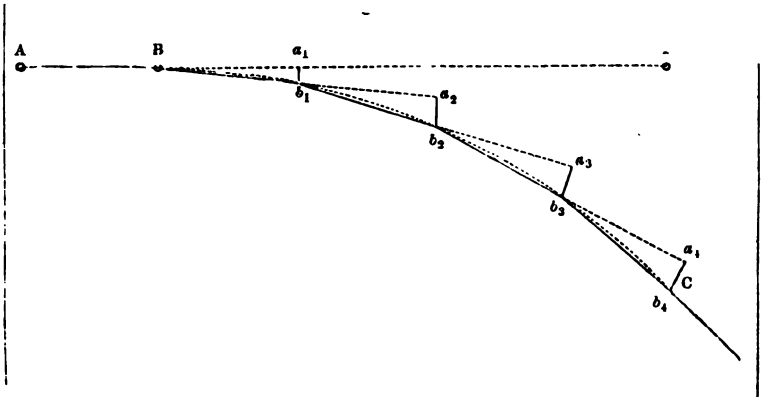


the staff at a_1, taking care to keep the chain straight; the point b_1 will then be the first point in the required curve: next measure another chain forward, and move the staff from a_1 to a_2, another point in the line B F again opposite to the end of the chain; then look in the Table for the offset at 2 chains, which is 5 feet 3·4 inches, and having moved the end (b_2) of the chain, until it is that distance from the staff a_2, the point thus found will be the second point in the curve: and thus proceed in a similar manner until the whole extent of the curve has been set out. Should, however, the length of the curve exceed the number of chains for which the offsets are given in the Tables, as soon as that number has been set out a fresh tangent line may be found in the following manner, and the remainder of the curve may then be set out as from the first line. The method of finding this tangent is simply to measure from B along the tangent line B F the distance B D, found at the head of each Table after the radius, and which in the present example is 3·523 chains; then a staff being put up at the point D thus found, and another at the last peg, the offset for which is given in the Tables, the continuation (G H) of the line

D G passing through them will be the tangent required.

As it is seldom that the extent of the curve required to connect two straight portions of the line consists of any precise number of even chains, offsets have been given for fractional portions of a chain, in order to enable the tangent to any point in the curve intermediate between any two chains to be correctly determined.

The third method, although liable to some objections, is that which until of late years was most generally employed. It is shown in fig. 3, in which the letters of reference are the same as before, and the manner in which the position of the first point (b_1) in the curve is found is the same as in the last method; that, however, in which the subsequent points are found is different, and is as follows: having put up a staff at B and another at b_1, measure a chain forward from b_1 and put up a staff at a_2, in the same line as B and b_1, and move the end of the chain (b_2) until it is twice as far from a_2 as b_1 was from a_1; then having set up a staff at b_2, measure forward another chain, put up a staff at a_3, opposite the end of the chain in a line with the last two points in the curve (b_1 and b_2), and move the


A
B
a_1
b_1
a_2
b_2
a_3
b_3
a_4
C
b_4

end of the chain (b_3) until it is the same distance from a_3 as b_2 was from a_2, and thus proceed to find each subsequent point in the required curve: if the curve were the same as in the last example, namely 25 chains radius, the first offset a_1 b_1 would be 1 foot 3·8 inches, and each of the other offsets a_2 b_2, a_3 b_3, &c., would be twice this, or 2 feet 7·6 inches.

TABLES.

RADIUS = 5 CHAINS.—B D = 1·016 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	5	44	22	**6**	34	26	11	**0·25**	0	4·9
2	11	28	44	**7**	40	10	33	**0·50**	1	7·8
3	17	13	5	**8**	45	54	55	**0·75**	3	8·5
4	22	57	27	**9**	51	39	16	**1·00**	6	7·2
5	28	41	49	**10**	57	23	38	**2·00**	26	1·6

RADIUS = 6 CHAINS.—B D = 1·534 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	4	46	49	**11**	52	34	56	**0·15**	0	1·4
2	9	33	37	**12**	57	21	45	**0·25**	0	4·1
3	14	20	26	**13**	62	8	33	**0·40**	0	10·5
4	19	7	15	**14**	66	55	22	**0·50**	1	4·5
5	23	54	4	**15**	71	42	11	**0·60**	1	11·8
6	28	40	52	**16**	76	28	59	**0·75**	3	1·1
7	33	27	41	**17**	81	15	48	**0·90**	4	5·4
8	38	14	30	**18**	86	2	37	**1·00**	5	6·0
9	43	1	18	**19**	90	49	25	**2·00**	21	10·1
10	47	48	7	**20**	95	36	14	**3·00**	48	7·1

RADIUS = 7 CHAINS.—B D = 1·525 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	4	5	46	11	45	3	24	0·15	0	1·3
2	8	11	32	12	49	9	9	0·25	0	3·5
3	12	17	17	13	53	14	55	0·40	0	9·0
4	16	23	3	14	57	20	41	0·50	1	2·1
5	20	28	49	15	61	26	27	0·60	1	8·3
6	24	34	35	16	65	32	12	0·75	2	7·7
7	28	40	20	17	69	37	58	0·90	3	9·7
8	32	46	6	18	73	43	44	1·00	4	8·5
9	36	51	52	19	77	49	30	2·00	18	9·1
10	40	57	38	20	81	55	16	3·00	41	10·2

RADIUS = 8 CHAINS.—B D = 2·044 Ch^s.

Ch^s.	Angle β.			Ch.^{s}	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	3	35	0	11	39	25	0	0·15	0	1·1
2	7	10	0	12	43	0	0	0·30	0	4·4
3	10	45	0	13	46	34	59	0·50	1	0·3
4	14	20	0	14	50	9	59	0·60	1	5·8
5	17	55	0	15	53	44	59	0·75	2	3·3
6	21	30	0	16	57	19	59	0·90	3	4·1
7	25	5	0	17	60	54	59	1·00	4	1·5
8	28	40	0	18	64	29	59	2·00	16	5·2
9	32	15	0	19	68	4	59	3·00	36	8·8
10	35	50	0	20	71	39	59	4·00	64	8·6

RADIUS = 9 CHAINS.—BD = 2·035 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	″	″		ft.	ins.
1	3	11	5	11	35	1	56	0·15	0	1·0
2	6	22	10	12	38	13	1	0·30	0	4·0
3	9	33	15	13	41	24	6	0·50	0	10·9
4	12	44	20	14	44	35	11	0·60	1	3·8
5	15	55	25	15	47	46	16	0·75	2	0·7
6	19	6	30	16	50	57	21	0·90	2	11·6
7	22	17	35	17	54	8	26	1·00	3	7·9
8	25	28	41	18	57	19	31	2·00	14	7·4
9	28	39	46	19	60	30	36	3·00	32	8·7
10	31	50	51	20	63	41	41	4·00	57	9·2

RADIUS = 10 CHAINS.—BD = 2·028 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	2	51	58	11	31	31	33	0·20	0	1·6
2	5	43	55	12	34	23	31	0·30	0	3·6
3	8	35	53	13	37	15	28	0·50	0	9·9
4	11	27	50	14	40	7	26	0·60	1	2·2
5	14	19	48	15	42	59	23	0·75	1	10·2
6	17	11	45	16	45	51	21	0·90	2	8·1
7	20	3	43	17	48	43	18	1·00	3	3·6
8	22	55	40	18	51	35	16	2·00	13	2·0
9	25	47	38	19	54	27	13	3·00	29	6·0
10	28	39	35	20	57	19	11	4·00	52	1·7

RADIUS = 11 CHAINS.—B D = 2·023 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	2	36	19	11	28	39	28	0·20	0	1·4
2	5	12	38	12	31	15	47	0·30	0	3·2
3	7	48	57	13	33	52	6	0·50	0	8·9
4	10	25	16	14	36	28	25	0·60	1	0·9
5	13	1	35	15	39	4	44	0·75	1	8.2
6	15	37	54	16	41	41	3	0·90	2	2·6
7	18	14	13	17	44	17	22	1·00	2	11·9
8	20	50	32	18	46	53	41	2·00	11	11·7
9	23	26	50	19	49	30	0	3·00	26	10·2
10	26	3	9	20	52	6	19	4·00	47	6·1

RADIUS = 12 CHAINS.—B D = 2·019 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	2	23	17	11	26	16	6	0·20	0	1·3
2	4	46	34	12	28	39	23	0·30	0	2·9
3	7	9	51	13	31	2	40	0·50	0	8·2
4	9	33	8	14	33	25	57	0·60	0	11·9
5	11	56	24	15	35	49	13	0·75	1	6·5
6	14	19	41	16	38	12	30	0·90	2	2·7
7	16	42	58	17	40	35	47	1·00	2	9·0
8	19	6	15	18	42	59	4	2·00	11	3·8
9	21	29	32	19	45	22	21	3·00	24	7·6
10	23	52	49	20	47	45	38	4·00	43	7·4

RADIUS = 13 CHAINS.—B D = 2·532 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	2	12	15	11	24	14	48	0·20	0	1·2
2	4	24	31	12	26	27	3	0·40	0	4·8
3	6	36	46	13	28	39	18	0·50	0	7·6
4	8	49	1	14	30	51	34	0·65	1	0·8
5	11	1	16	15	33	3	49	0·80	1	7·5
6	13	13	32	16	35	16	4	1·00	2	6·5
7	15	25	47	17	37	28	19	2·00	10	1·6
8	17	38	2	18	39	40	35	3·00	22	9·1
9	19	50	17	19	41	52	50	4·00	40	3·8
10	22	2	33	20	44	5	5	5·00	62	8·5

RADIUS = 14 CHAINS.—B D = 2·527 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	2	2	48	11	22	30	50	0·20	0	1·1
2	4	5	36	12	24	33	38	0·40	0	4·5
3	6	8	25	13	26	36	26	0·50	0	7·0
4	8	11	13	14	28	39	15	0·65	1	0·5
5	10	14	1	15	30	42	3	0·80	1	6·0
6	12	16	49	16	32	44	51	1·00	2	4·3
7	14	19	37	17	34	47	39	2·00	9	5·0
8	16	22	26	18	36	50	27	3·00	21	1·7
9	18	25	14	19	38	53	16	4·00	37	5·7
10	20	28	2	20	40	56	4	5·00	58	4·0

RADIUS = 15 CHAINS.—B D = 2·524 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	54	37	11	21	0	44	0·20	0	1·0
2	3	49	13	12	22	55	21	0·40	0	4·2
3	5	43	50	13	24	49	58	0·50	0	6·6
4	7	38	27	14	26	44	34	0·65	0	11·1
5	9	33	4	15	28	39	11	0·80	1	4·9
6	11	27	40	16	30	33	48	1·00	2	2·4
7	13	22	17	17	32	28	25	2·00	8	9·5
8	15	16	54	18	34	23	1	3·00	19	8·9
9	17	11	31	19	36	17	38	4·00	35	2·9
10	19	6	7	20	38	12	15	5·00	54	6·1

RADIUS = 16 CHAINS.—B D = 2·521 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	47	27	11	19	41	55	0·20	0	0·9
2	3	34	54	12	21	29	22	0·40	0	4·0
3	5	22	20	13	23	16	49	0·50	0	6·2
4	7	9	47	14	25	4	15	0·65	0	10·4
5	8	57	14	15	26	51	42	0·80	1	3·8
6	10	44	41	16	28	39	9	1·00	2	0·7
7	12	32	8	17	30	26	36	2·00	8	2·9
8	14	19	34	18	32	14	3	3·00	18	6·1
9	16	7	1	19	34	1	29	4·00	32	10·1
10	17	54	28	20	35	48	56	5·00	51	2·0

RADIUS = 17 CHAINS.—B D = 2·519 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	41	7	11	18	32	22	0·20	0	0·9
2	3	22	15	12	20	13	30	0·40	0	3·7
3	5	3	22	13	21	54	37	0·50	0	5·8
4	6	44	30	14	23	35	45	0·65	0	9·8
5	8	25	37	15	25	16	52	0·80	1	2·9
6	10	6	45	16	26	58	0	1·00	1	11·3
7	11	47	52	17	28	39	7	2·00	7	9·1
8	13	29	0	18	30	20	15	3·00	17	5·2
9	15	10	7	19	32	1	22	4·00	30	11·0
10	16	51	15	20	33	42	30	5·00	48	2·3

RADIUS = 18 CHAINS.—B D = 3·029 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	35	30	11	17	30	33	0·25	0	1·3
2	3	11	1	12	19	6	4	0·50	0	5·5
3	4	46	31	13	20	41	34	0·65	0	9·3
4	6	22	1	14	22	17	4	0·80	1	2·0
5	7	57	31	15	23	52	34	1·00	1	10·0
6	9	33	2	16	25	28	5	2·00	7	3·9
7	11	8	32	17	27	3	35	3·00	16	5·6
8	12	44	2	18	28	39	5	4·00	29	2·7
9	14	19	33	19	30	14	36	5·00	45	6·6
10	15	55	3	20	31	50	6	6·00	65	4·9

RADIUS = 19 CHAINS.—B D = 3·026 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	30	29	11	16	35	15	0·25	0	1·3
2	3	0	57	12	18	5	44	0·50	0	5·2
3	4	31	26	13	19	36	12	0·65	0	8·8
4	6	1	55	14	21	6	41	0·80	1	1·3
5	7	32	23	15	22	37	10	1·00	1	8·8
6	9	2	52	16	24	7	38	2·00	6	11·3
7	10	33	20	17	25	38	7	3·00	15	7·2
8	12	3	49	18	27	8	36	4·00	27	8·3
9	13	34	18	19	28	39	4	5·00	43	2·1
10	15	4	46	20	30	9	33	6·00	62	0·2

RADIUS = 20 CHAINS.—B D = 3·023 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	25	57	11	15	45	29	0·25	0	1·2
2	2	51	54	12	17	11	26	0·50	0	4·9
3	4	17	51	13	18	37	23	0·65	0	8·3
4	5	43	49	14	20	3	20	0·80	1	0·7
5	7	9	46	15	21	29	17	1·00	1	7·8
6	8	35	43	16	22	55	14	2·00	6	7·1
7	10	1	40	17	24	21	11	3·00	14	9·9
8	11	27	37	18	25	47	9	4·00	26	3·8
9	12	53	34	19	27	13	6	5·00	41	0·5
10	14	19	31	20	28	39	3	6·00	58	11·6

RADIUS = 21 CHAINS.—B D = 3·021 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	21	52	11	15	0	27	0·25	0	1·2
2	2	43	43	12	16	22	18	0·50	0	4·7
3	4	5	35	13	17	44	10	0·65	0	7·9
4	5	27	26	14	19	6	1	0·80	1	0·0
5	6	49	18	15	20	27	53	1·00	1	6·8
6	8	11	9	16	21	49	44	2·00	6	3·4
7	9	33	1	17	23	11	36	3·00	14	1·5
8	10	54	52	18	24	33	27	4·00	25	0·9
9	12	16	44	19	25	55	19	5·00	39	1·3
10	13	38	35	20	27	17	10	6·00	56	2·4

RADIUS = 22 CHAINS.—B D = 3·019 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	18	8	11	14	19	31	0·25	0	1·1
2	2	36	16	12	15	37	39	0·50	0	4·5
3	3	54	25	13	16	55	47	0·65	0	7·5
4	5	12	33	14	18	13	55	0·80	0	11·5
5	6	30	41	15	19	32	3	1·00	1	6·0
6	7	48	49	16	20	50	12	2·00	6	0·0
7	9	6	58	17	22	8	20	3·00	13	5·0
8	10	25	6	18	23	26	28	4·00	23	11·3
9	11	43	14	19	24	44	36	5·00	37	4·2
10	13	1	22	20	26	2	45	6·00	53	8·1

RADIUS = 23 CHAINS.—B D = 3·017 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	14	44	11	13	42	8	0·25	0	1·1
2	2	29	29	12	14	56	52	0·50	0	4·3
3	3	44	13	13	16	11	37	0·65	0	7·2
4	4	58	57	14	17	26	21	0·80	0	11·0
5	6	13	42	15	18	41	5	1·00	1	5·2
6	7	28	26	16	19	55	50	2·00	5	8·8
7	8	43	11	17	21	10	34	3·00	12	10·7
8	9	57	55	18	22	25	18	4·00	22	10·8
9	11	12	39	19	23	40	3	5·00	35	8·8
10	12	27	24	20	24	54	47	6·00	51	4·4

RADIUS = 24 CHAINS.—B D = 3·016 Chs.

Chs.	Angle β,			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	11	37	11	13	7	52	0·25	0	1·0
2	2	23	15	12	14	19	30	0·50	0	4·1
3	3	34	52	13	15	31	7	0·65	0	7·0
4	4	46	30	14	16	42	45	0·80	0	10·6
5	5	58	7	15	17	54	22	1·00	1	4·5
6	7	9	45	16	19	6	0	2·00	5	6·0
7	8	21	22	17	20	17	37	3·00	12	4·3
8	9	33	0	18	21	29	15	4·00	21	11·4
9	10	44	37	19	22	40	52	5·00	34	3·0
10	11	56	15	20	23	52	30	6·00	49	3·0

RADIUS = 25 CHAINS.—B D = 3·523 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	8	46	11	12	36	23	0·25	0	0·9
2	2	17	31	12	13	45	9	0·50	0	4·0
3	3	26	17	13	14	53	55	0·75	0	8·9
4	4	35	3	14	16	2	40	1·00	1	3·8
5	5	43	49	15	17	11	26	2·00	5	3·4
6	6	52	34	16	18	20	12	3·00	11	10·4
7	8	1	20	17	19	28	58	4·00	21	1·0
8	9	10	6	18	20	37	43	5·00	32	10·7
9	10	18	52	19	21	46	29	6·00	47	3·6
10	11	27	37	20	22	55	15	7·00	64	3·2

RADIUS = 26 CHAINS.—B D = 3·521 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	6	7	11	12	7	16	0·30	0	1·3
2	2	12	14	12	13	13	22	0·50	0	3·8
3	3	18	21	13	14	19	29	0·75	0	8·5
4	4	24	27	14	15	25	36	1·00	1	3·2
5	5	30	34	15	16	31	43	2·00	5	0·9
6	6	36	41	16	17	37	50	3·00	11	4·9
7	7	42	48	17	18	43	57	4·00	20	3·2
8	8	48	55	18	19	50	4	5·00	31	7·6
9	9	55	2	19	20	56	11	6·00	45	5·9
10	11	1	9	20	22	2	17	7·00	61	9·9

RADIUS = 27 CHAINS.—B D = 3·520 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	3	40	**11**	11	40	19	**0·30**	0	1·3
2	2	7	20	**12**	12	43	59	**0·50**	0	3·6
3	3	11	0	**13**	13	47	39	**0·75**	0	8·2
4	4	14	40	**14**	14	51	19	**1·00**	1	2·6
5	5	18	20	**15**	15	54	59	**2·00**	4	10·6
6	6	22	0	**16**	16	58	39	**3·00**	10	11·9
7	7	25	40	**17**	18	2	19	**4·00**	19	6·3
8	8	29	19	**18**	19	5	59	**5·00**	30	5·6
9	9	32	59	**19**	20	9	39	**6·00**	43	9·8
10	10	36	39	**20**	21	13	19	**7·00**	59	5·7

RADIUS = 28 CHAINS.—B D = 3·518 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	1	1	23	**11**	11	15	18	**0·30**	0	1·3
2	2	2	47	**12**	12	16	42	**0·50**	0	3·5
3	3	4	10	**13**	13	18	5	**0·75**	0	7·9
4	4	5	34	**14**	14	19	29	**1·00**	1	2·1
5	5	6	57	**15**	15	20	52	**2·00**	4	8·5
6	6	8	21	**16**	16	22	16	**3·00**	10	7·2
7	7	9	44	**17**	17	23	39	**4·00**	18	9·9
8	8	11	8	**18**	18	25	3	**5·00**	29	4·7
9	9	12	31	**19**	19	26	26	**6·00**	42	3·2
10	*10*	*13*	*55*	**20**	20	27	50	**7·00**	57	5·4

RADIUS = 29 CHAINS.—B D = 3·517 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	59	16	11	10	52	1	0·30	0	1·2
2	1	58	33	12	11	51	18	0·50	0	3·4
3	2	57	49	13	12	50	34	0·75	0	7·7
4	3	57	6	14	13	49	50	1·00	1	1·6
5	4	56	22	15	14	49	7	2·00	4	6·6
6	5	55	39	16	15	48	23	3·00	10	2·8
7	6	54	55	17	16	47	40	4·00	18	2·1
8	7	54	12	18	17	46	56	5·00	28	4·6
9	8	53	28	19	18	46	13	6·00	40	9·9
10	9	52	45	20	19	45	29	7·00	55	5·9

RADIUS = 30 CHAINS.—B D = 3·516 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	57	18	11	10	30	17	0·30	0	1·2
2	1	54	36	12	11	27	35	0·50	0	3·3
3	2	51	54	13	12	24	53	0·75	0	7·4
4	3	49	12	14	13	22	11	1·00	1	1·2
5	4	46	29	15	14	19	28	2·00	4	4·7
6	5	43	47	16	15	16	46	3·00	9	10·7
7	6	41	5	17	16	14	4	4·00	17	6·9
8	7	38	23	18	17	11	22	5·00	27	5·2
9	8	35	41	19	18	8	40	6·00	39	5·6
10	9	32	59	20	19	5	58	7·00	53	7·9

RADIUS = 31 CHAINS.—B D = 3·515 Ch^s.

Ch^s.	Angle β.		
	°	′	″
1	0	55	27
2	1	50	54
3	2	46	21
4	3	41	48
5	4	37	15
6	5	32	42
7	6	28	9
8	7	23	36
9	8	19	3
10	9	14	30

Ch^s.	Angle β.		
	°	′	″
11	10	9	57
12	11	5	24
13	12	0	51
14	12	56	18
15	13	51	45
16	14	47	12
17	15	42	39
18	16	38	6
19	17	33	33
20	18	29	0

Chains.	Offset.	
	ft.	ins.
0·30	0	1·1
0·50	0	3·2
0·75	0	7·2
1·00	1	0·7
2·00	4	3·1
3·00	9	6·9
4·00	17	0·2
5·00	26	6·7
6·00	38	2·5
7·00	51	11·3

RADIUS = 32 CHAINS.—B D = 4·021 Ch^s.

Ch^s.	Angle β.		
	°	′	″
1	0	53	43
2	1	47	26
3	2	41	9
4	3	34	52
5	4	28	35
6	5	22	18
7	6	16	1
8	7	9	44
9	8	3	27
10	8	57	10

Ch^s.	Angle β.		
	°	′	″
11	9	50	53
12	10	44	36
13	11	38	19
14	12	32	2
15	13	25	45
16	14	19	28
17	15	13	11
18	16	6	54
19	17	0	37
20	17	54	20

Chains.	Offset.	
	ft.	ins.
0·50	0	3·1
0·75	0	6·9
1·00	1	0·3
2·00	4	1·5
3·00	9	3·3
4·00	16	5·8
5·00	25	8·8
6·00	37	0·2
7·00	50	4·0
8·00	65	8·0

RADIUS = 33 CHAINS.—B D = 4·020 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	52	5	11	9	32	59	0·50	0	3·0
2	1	44	11	12	10	25	4	0·75	0	6·7
3	2	36	16	13	11	17	9	1·00	0	11·9
4	3	28	21	14	12	9	15	2·00	4	0·0
5	4	20	27	15	13	1	20	3·00	8	11·9
6	5	12	32	16	13	53	25	4·00	15	11·7
7	6	4	37	17	14	45	31	5·00	24	11·4
8	6	56	43	18	15	37	36	6·00	35	8·0
9	7	48	48	19	16	29	41	7·00	48	9·8
10	8	40	53	20	17	21	47	8·00	63	8·3

RADIUS = 34 CHAINS.—B D = 4·019 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	50	33	11	9	16	7	0·50	0	2·9
2	1	41	7	12	10	6	41	0·75	0	6·6
3	2	31	40	13	10	57	14	1·00	0	11·6
4	3	22	14	14	11	47	48	2·00	3	10·6
5	4	12	47	15	12	38	21	3·00	8	8·8
6	5	3	20	16	13	28	54	4·00	15	6·1
7	5	53	54	17	14	19	28	5·00	24	2·7
8	6	44	27	18	15	10	1	6·00	34	10·2
9	7	35	1	19	16	0	35	7·00	47	4·7
10	8	25	34	20	16	51	8	8·00	61	10·0

RADIUS = 35 CHAINS.—B D = 4·018 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	49	7	11	9	0	14	0·50	0	2·8
2	1	38	13	12	9	49	21	0·75	0	6·3
3	2	27	20	13	10	38	28	1·00	0	11·3
4	3	16	27	14	11	27	34	2·00	3	9·2
5	4	5	34	15	12	16	41	3·00	8	5·8
6	4	54	40	16	13	5	48	4·00	15	0·8
7	5	43	47	17	13	54	55	5·00	23	6·4
8	6	32	54	18	14	44	1	6·00	33	10·4
9	7	22	1	19	15	33	8	7·00	46	0·6
10	8	11	7	20	16	22	15	8·00	60	1·0

RÁDIUS = 36 CHAINS.—B D = 4·017 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	47	45	11	8	45	14	0·50	0	2·8
2	1	35	30	12	9	32	59	0·75	0	6·2
3	2	23	15	13	10	20	43	1·00	0	11·0
4	3	11	0	14	11	8	28	2·00	3	7·9
5	3	58	44	15	11	56	13	3·00	8	2·9
6	4	46	29	16	12	43	58	4·00	14	7·8
7	5	34	14	17	13	31	43	5·00	22	10·6
8	6	21	59	18	14	19	28	6·00	32	11·1
9	7	9	44	19	15	7	13	7·00	44	9·3
10	7	57	29	20	15	54	58	8·00	58	5·1

RADIUS = 37 CHAINS.—B D = 4·016 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	46	27	11	8	31	2	0·50	0	2·7
2	1	32	55	12	9	17	29	0·75	0	5·9
3	2	19	22	13	10	3	57	1·00	0	10·7
4	3	5	50	14	10	50	24	2·00	3	6·8
5	3	52	17	15	11	36	52	3·00	8	0·2
6	4	38	45	16	12	23	19	4·00	14	3·1
7	5	25	12	17	13	9	46	5·00	22	3·1
8	6	11	40	18	13	56	14	6·00	32	0·5
9	6	58	7	19	14	42	41	7·00	43	6·9
10	7	44	34	20	15	29	9	8·00	56	10·4

RADIUS = 38 CHAINS.—B D = 4·015 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	45	14	11	8	17	35	0·50	0	2·6
2	1	30	28	12	9	2	49	0·75	0	5·9
3	2	15	42	13	9	48	3	1·00	0	10·4
4	3	0	56	14	10	33	17	2·00	3	5·2
5	3	46	10	15	11	18	31	3·00	7	9·8
6	4	31	25	16	12	3	45	4·00	13	10·3
7	5	16	39	17	12	49	0	5·00	21	8·2
8	6	1	53	18	13	34	14	6·00	31	2·4
9	6	47	7	19	14	19	28	7·00	42	5·2
10	7	32	21	20	15	4	42	8·00	55	4·5

RADIUS = 39 CHAINS.—BD = 4·014 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	″	″		ft.	ins.
1	0	44	4	11	8	4	49	0·50	0	2·5
2	1	28	9	12	8	48	54	0·75	0	5·7
3	2	12	13	13	9	32	58	1·00	0	10·1
4	2	56	18	14	10	17	3	2·00	3	4·6
5	3	40	22	15	11	1	7	3·00	7	7·3
6	4	24	27	16	11	45	12	4·00	13	6·3
7	5	8	31	17	12	29	16	5·00	21	1·5
8	5	52	36	18	13	13	21	6·00	30	4·8
9	6	36	40	19	13	57	25	7·00	41	4·2
10	7	20	45	20	14	41	30	8·00	53	11·6

RADIUS = 40 CHAINS.—BD = 4·013 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	42	58	11	7	52	42	0·50	0	2·4
2	1	25	57	12	8	35	40	0·75	0	5·5
3	2	8	55	13	9	18	39	1·00	0	9·9
4	2	51	53	14	10	1	37	2·00	3	3·6
5	3	34	52	15	10	44	36	3·00	7	5·1
6	4	17	50	16	11	27	34	4·00	13	2·2
7	5	0	49	17	12	10	32	5·00	20	7·2
8	5	43	47	18	12	53	31	6·00	29	7·8
9	6	26	45	19	13	36	29	7·00	40	3·9
10	7	9	44	20	14	19	27	8·00	52	7·5

RADIUS = 41 CHAINS.—B D = 4·013 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	41	55	11	7	41	10	0·50	0	2·4
2	1	23	51	12	8	23	6	0·75	0	5·4
3	2	5	46	13	9	5	1	1·00	0	9·7
4	2	47	42	14	9	46	57	2·00	3	2·6
5	3	29	37	15	10	28	52	3·00	7	2·9
6	4	11	33	16	11	10	48	4·00	12	10·4
7	4	53	28	17	11	52	43	5·00	20	1·2
8	5	35	24	18	12	34	39	6·00	28	11·0
9	6	17	19	19	13	16	34	7·00	39	4·1
10	6	59	15	20	13	58	30	8·00	51	4·2

RADIUS = 42 CHAINS.—B D = 4·012 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	40	56	11	7	30	11	0·50	0	2·3
2	1	21	51	12	8	11	7	0·75	0	5·3
3	2	2	47	13	8	52	3	1·00	0	9·4
4	2	43	42	14	9	32	58	2·00	3	1·7
5	3	24	38	15	10	13	54	3·00	7	0·9
6	4	5	34	16	10	54	49	4·00	12	6·8
7	4	46	29	17	11	35	45	5·00	19	7·5
8	5	27	25	18	12	16	41	6·00	28	3·0
9	6	8	20	19	12	57	36	7·00	38	5·0
10	6	49	16	20	13	38	32	8·00	50	1·7

RADIUS = 43 CHAINS.—B D = 4·011 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	39	58	11	7	19	43	0·50	0	2·3
2	1	19	57	12	7	59	42	0·75	0	5·2
3	1	59	55	13	8	39	40	1·00	0	9·2
4	2	39	54	14	9	19	39	2·00	3	0·8
5	3	19	52	15	9	59	37	3·00	6	10·8
6	3	59	51	16	10	39	36	4·00	12	3·2
7	4	39	49	17	11	19	34	5·00	19	2·0
8	5	19	48	18	11	59	33	6·00	27	7·0
9	5	59	46	19	12	39	31	7·00	37	6·2
10	6	39	45	20	13	19	30	8·00	48	11·7

RADIUS = 44 CHAINS.—B D = 4·011 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	39	4	11	7	9	44	0·50	0	2·2
2	1	18	8	12	7	48	48	0·75	0	5·1
3	1	57	12	13	8	27	51	1·00	0	9·0
4	2	36	16	14	9	6	55	2·00	2	11·9
5	3	15	20	15	9	45	59	3·00	6	8·9
6	3	54	24	16	10	25	3	4·00	11	11·9
7	4	33	28	17	11	4	7	5·00	18	8·8
8	5	12	32	18	11	43	11	6·00	26	11·5
9	5	51	36	19	12	22	15	7·00	36	8·1
10	6	30	40	20	13	1	19	8·00	47	10·4

RADIUS = 45 CHAINS.—B D = 4·011 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	38	12	11	7	0	11	0·50	0	2·2
2	1	16	24	12	7	38	23	0·75	0	4·9
3	1	54	36	13	8	16	34	1·00	0	8·8
4	2	32	48	14	8	54	46	2·00	2	11·1
5	3	10	59	15	9	32	58	3·00	6	7·2
6	3	49	11	16	10	11	10	4·00	11	3·2
7	4	27	23	17	10	49	22	5·00	18	3·8
8	5	5	35	18	11	27	34	6·00	26	4·3
9	5	43	47	19	12	5	46	7·00	35	10·4
10	6	21	59	20	12	43	58	8·00	46	9·8

RADIUS = 46 CHAINS.—B D = 4·010 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	37	22	11	6	51	3	0·50	0	2·1
2	1	14	44	12	7	28	25	0·75	0	4·8
3	1	51	66	13	8	5	47	1·00	0	8·6
4	2	29	28	14	8	43	9	2·00	2	10·4
5	3	6	50	15	9	20	31	3·00	6	5·4
6	3	44	12	16	9	57	53	4·00	11	5·6
7	4	21	34	17	10	35	15	5·00	17	11·0
8	4	58	56	18	11	12	37	6·00	25	9·5
9	5	36	18	19	11	49	59	7·00	35	1·0
10	6	13	40	20	12	27	21	8·00	45	9·6

RADIUS = 47 CHAINS.—B D = 4·010 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	36	34	11	6	42	18	0·50	0	2·1
2	1	13	9	12	7	18	52	0·75	0	4·7
3	1	49	43	13	7	55	26	1·00	0	8·4
4	2	26	17	14	8	32	1	2·00	2	9·7
5	3	2	52	15	9	8	35	3·00	6	3·8
6	3	39	26	16	9	45	9	4·00	11	2·7
7	4	16	0	17	10	21	44	5·00	16	10·0
8	4	52	35	18	10	58	18	6·00	24	6·4
9	5	29	9	19	11	34	52	7·00	33	7·6
10	6	5	43	20	12	11	27	8·00	44	1·4

RADIUS = 48 CHAINS.—B D = 4·009 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	35	49	11	6	33	55	0·50	0	2·0
2	1	11	37	12	7	9	44	0·75	0	4·6
3	1	47	26	13	7	45	32	1·00	0	8·2
4	2	23	15	14	8	21	21	2·00	2	9·0
5	2	59	3	15	8	57	9	3·00	6	2·2
6	3	34	52	16	9	32	58	4·00	10	11·9
7	4	10	40	17	10	8	47	5·00	17	2·1
8	4	46	29	18	10	44	35	6·00	24	7·6
9	5	22	18	19	11	20	24	7·00	33	7·5
10	5	58	6	20	11	56	13	8·00	43	10·7

RADIUS = 49 CHAINS.—B D = 4·009 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	35	5	11	6	25	53	0·50	0	2·0
2	1	10	10	12	7	0	57	0·75	0	4·5
3	1	45	14	13	7	36	2	1·00	0	8·1
4	2	20	19	14	8	11	7	2·00	2	8·3
5	2	55	24	15	8	46	12	3·00	6	0·7
6	3	30	29	16	9	21	16	4·00	10	9·2
7	4	5	33	17	9	56	21	5·00	16	9·9
8	4	40	38	18	10	31	26	6·00	24	2·6
9	5	15	43	19	11	6	31	7·00	32	11·4
10	5	50	48	20	11	41	36	8·00	43	0·1

RADIUS = 50 CHAINS.—B D = 4·009 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	34	23	11	6	18	9	0.50	0	2·0
2	1	8	45	12	6	52	32	0·75	0	4·4
3	1	43	8	13	7	26	55	1·00	0	7·9
4	2	17	31	14	8	1	18	2·00	2	7·7
5	2	51	53	15	8	35	40	3·00	5	11·3
6	3	26	16	16	9	10	3	4·00	10	6·7
7	4	0	39	17	9	44	26	5·00	16	5·8
8	4	35	1	18	10	18	48	6·00	23	8·8
9	5	9	24	19	10	53	11	7·00	32	3·4
10	5	43	47	20	11	27	34	8·00	42	1·8

RADIUS = 51 CHAINS.—B D = 4·008 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	33	42	11	6	10	45	0·50	0	1·9
2	1	7	24	12	6	44	27	0·75	0	4·3
3	1	41	7	13	7	18	9	1·00	0	7·8
4	2	14	49	14	7	51	51	2·00	2	7·0
5	2	48	31	15	8	25	33	3·00	5	9·8
6	3	22	13	16	8	59	16	4·00	10	4·0
7	3	55	56	17	9	32	58	5·00	16	1·8
8	4	29	38	18	10	6	40	6·00	23	3·1
9	5	3	20	19	10	40	22	7·00	31	7·8
10	5	37	2	20	11	14	5	8·00	41	3·8

RADIUS = 52 CHAINS.—B D = 4·008 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	33	3	11	6	3	37	0·50	0	1·9
2	1	6	7	12	6	36	40	0·75	0	4·3
3	1	39	10	13	7	9	44	1·00	0	7·6
4	2	12	13	14	7	42	47	2·00	2	6·4
5	2	45	17	15	8	15	50	3·00	5	8·5
6	3	18	20	16	8	48	54	4·00	10	1·8
7	3	51	23	17	9	21	57	5·00	15	10·2
8	4	24	27	18	9	55	0	6·00	24	5·9
9	4	57	30	19	10	28	4	7·00	31	0·5
10	5	30	33	20	11	1	7	8·00	40	6·4

RADIUS = **53 CHAINS**.—B D = 4·008 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	32	26	**11**	5	56	45	**0·50**	0	1·9
2	1	4	52	**12**	6	29	11	**0·75**	0	4·2
3	1	37	18	**13**	7	1	37	**1·00**	0	7·4
4	2	9	44	**14**	7	34	3	**2·00**	2	5·8
5	2	42	10	**15**	8	6	29	**3·00**	5	7·2
6	3	14	36	**16**	8	38	55	**4·00**	9	11·5
7	3	47	2	**17**	9	11	21	**5·00**	15	6·7
8	4	19	28	**18**	9	43	47	**6·00**	22	4·7
9	4	51	54	**19**	10	16	13	**7·00**	30	5·6
10	5	24	19	**20**	10	48	39	**8·00**	39	9·2

RADIUS = **54 CHAINS**.—B D = 4·007 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	31	50	**11**	5	50	9	**0·50**	0	1·8
2	1	3	40	**12**	6	21	59	**0·75**	0	4·1
3	1	35	30	**13**	6	53	48	**1·00**	0	7·3
4	2	7	20	**14**	7	25	38	**2·00**	2	5·3
5	2	39	9	**15**	7	57	28	**3·00**	5	6·0
6	3	10	59	**16**	8	29	18	**4·00**	9	9·2
7	3	42	49	**17**	9	1	8	**5·00**	15	3·2
8	4	14	39	**18**	17	32	58	**6·00**	22	0·0
9	4	46	29	**19**	18	4	48	**7·00**	29	11·1
10	5	18	19	**20**	18	36	38	**8·00**	39	0·7

RADIUS = 55 CHAINS.—B D = 4·007 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	31	15	11	5	43	46	0·50	0	1·8
2	1	2	30	12	6	15	1	0·75	0	4·0
3	1	33	45	13	6	46	16	1·00	0	7·2
4	2	5	0	14	7	17	31	2·00	2	4·7
5	2	36	15	15	7	48	46	3·00	5	4·8
6	3	7	31	16	8	20	2	4·00	9	7·1
7	3	38	46	17	8	51	17	5·00	14	11·9
8	4	10	1	18	9	22	32	6·00	21	5·3
9	4	41	16	19	9	53	47	7·00	29	2·7
10	5	12	31	20	10	25	2	8·00	38	2·4

RADIUS = 56 CHAINS.—B D = 4·007 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	30	42	11	5	37	38	0·50	0	1·8
2	1	1	23	12	6	8	20	0·75	0	4·0
3	1	32	5	13	6	39	2	1·00	0	7·0
4	2	2	47	14	7	9	43	2·00	2	4·3
5	2	33	28	15	7	40	25	3·00	5	3·6
6	3	4	10	16	8	11	7	4·00	9	5·1
7	3	34	52	17	8	41	48	5·00	14	8·7
8	4	5	33	18	9	12	30	6·00	11	2·3
9	4	36	15	19	9	43	12	7·00	28	10·0
10	5	6	57	20	10	13	53	8·00	37	7·7

RADIUS = 57 CHAINS.—B D = 4·007 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	30	9	11	5	31	43	0·50	0	1·7
2	1	0	19	12	6	1	52	0·75	0	3·9
3	1	30	28	13	6	32	2	1·00	0	6·9
4	2	0	37	14	7	2	11	2·00	2	3·8
5	2	30	47	15	7	32	20	3·00	5	2·5
6	3	0	56	16	8	2	30	4·00	9	3·1
7	3	31	5	17	8	32	39	5·00	14	5·5
8	4	1	15	18	9	2	48	6·00	20	9·9
9	4	31	24	19	9	32	58	7·00	28	4·0
10	5	1	33	20	10	3	7	8·00	36	11·9

RADIUS = 58 CHAINS.—B D = 4·006 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	29	38	11	5	26	0	0·50	0	1·7
2	0	59	16	12	5	55	38	0·75	0	3·8
3	1	28	54	13	6	25	16	1·00	0	6·8
4	1	58	33	14	6	54	54	2·00	2	3·2
5	2	28	11	15	7	24	32	3·00	5	1·4
6	2	57	49	16	7	54	10	4·00	9	1·1
7	3	27	27	17	8	23	49	5·00	14	2·5
8	3	57	5	18	8	53	27	6·00	20	5·5
9	4	26	43	19	9	23	5	7·00	27	10·1
10	4	56	21	20	9	52	43	8·00	36	4·2

RADIUS = 59 CHAINS.—B D = 4·006 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	29	8	11	5	20	28	0·50	0	1·7
2	0	58	16	12	5	49	36	0·75	0	3·7
3	1	27	24	13	6	18	44	1·00	0	6·7
4	1	56	32	14	6	47	52	2·00	2	2·8
5	2	25	40	15	7	17	0	3·00	5	0·3
6	2	54	48	16	7	46	8	4·00	8	11·4
7	3	23	56	17	7	75	17	5·00	13	11·7
8	3	53	4	18	8	44	25	6·00	20	2·2
9	4	22	12	19	9	13	33	7·00	27	5·3
10	4	51	20	20	9	42	41	8·00	35	9·6

RADIUS = 60 CHAINS.—B D = 4·006 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	28	39	11	5	15	8	0·50	0	1·6
2	0	57	18	12	5	43	47	0·75	0	3·6
3	1	25	57	13	6	12	26	1·00	0	6·6
4	1	54	36	14	6	41	4	2·00	2	2·4
5	2	23	14	15	7	9	43	3·00	4	11·4
6	2	51	53	16	7	38	22	4·00	8	9·6
7	3	20	32	17	8	7	1	5·00	13	8·9
8	3	49	11	18	8	35	40	6·00	19	9·4
9	4	17	50	19	9	4	19	7·00	26	11·0
10	4	46	29	20	9	32	58	8·00	35	1·7

RADIUS = 61 CHAINS.—B D = 4·006 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	28	11	11	5	9	58	0·50	0	1·6
2	0	56	21	12	5	38	9	0·75	0	3·6
3	1	24	32	13	6	6	19	1·00	0	6·5
4	1	52	43	14	6	34	30	2·00	2	1·9
5	2	20	53	15	7	2	41	3·00	4	10·4
6	2	49	4	16	7	30	51	4·00	8	7·7
7	3	17	15	17	7	59	2	5·00	13	6·2
8	3	45	26	18	8	27	13	6·00	19	5·5
9	4	13	36	19	8	55	23	7·00	26	5·7
10	4	41	47	20	9	23	34	8·00	34	6·8

RADIUS = 62 CHAINS.—B D = 4·006 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	27	43	11	5	4	58	0·50	0	1·6
2	0	55	27	12	5	32	41	0·75	0	3·6
3	1	23	10	13	6	0	25	1·00	0	6·4
4	1	50	54	14	6	28	8	2·00	2	1·5
5	2	18	37	15	6	55	52	3·00	4	9·5
6	2	46	21	16	7	23	35	4·00	8	6·2
7	3	14	4	17	7	51	18	5·00	13	3·6
8	3	41	48	18	8	19	2	6·00	19	1·7
9	4	9	31	19	8	46	45	7·00	26	0·6
10	4	37	47	20	9	14	29	8·00	34	0·2

RADIUS = 63 CHAINS.—B D = 4·005 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	27	17	11	5	0	7	0·50	0	1·6
2	0	54	34	12	5	27	24	0·75	0	3·5
3	1	21	51	13	5	54	42	1·00	0	6·3
4	1	49	8	14	6	21	59	2·00	2	1·1
5	2	16	25	15	6	49	16	3·00	4	8·5
6	2	43	42	16	7	16	33	4·00	8	4·5
7	3	10	59	17	7	43	50	5·00	13	1·0
8	3	38	16	18	8	11	7	6·00	18	10·1
9	4	5	33	19	8	38	24	7·00	25	7·7
10	4	32	50	20	9	5	41	8·00	33	5·8

RADIUS = 64 CHAINS.—B D = 4·005 Ch^s

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	26	51	11	4	55	26	0·50	0	1·5
2	0	53	43	12	5	22	18	0·75	0	3·4
3	1	20	34	13	5	49	9	1·00	0	6·2
4	1	47	26	14	6	16	0	2·00	2	0·7
5	2	14	17	15	6	42	52	3·00	4	7·7
6	2	41	9	16	7	9	43	4·00	8	2·9
7	3	8	0	17	7	36	35	5·00	12	10·6
8	3	34	52	18	8	3	26	6·00	18	6·5
9	4	1	43	19	8	30	18	7·00	25	2·9
10	4	28	35	20	8	57	9	8·00	32	11·4

RADIUS = 65 CHAINS.—B D = 4·005 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	26	27	11	4	50	53	0·50	0	1·5
2	0	52	53	12	5	17	20	0·75	0	3·4
3	1	19	20	13	5	43	47	1·00	0	6·1
4	1	45	47	14	6	10	13	2·00	2	0·4
5	2	12	13	15	6	36	40	3·00	4	6·8
6	2	38	40	16	7	3	7	4·00	8	1·4
7	3	5	7	17	7	29	33	5·00	12	8·2
8	3	31	33	18	7	56	0	6·00	18	3·0
9	3	58	0	19	8	22	27	7·00	24	10·1
10	4	24	27	20	8	48	53	8·00	32	5·4

RADIUS = 66 CHAINS.—B D = 4·005 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	26	3	11	4	46	29	0·50	0	1·5
2	0	52	5	12	5	12	32	0·75	0	3·3
3	1	18	8	13	5	38	34	1·00	0	6·0
4	1	44	11	14	6	4	37	2·00	2	0·0
5	2	10	13	15	6	30	39	3·00	4	6·0
6	2	36	16	16	6	56	42	4·00	8	0·0
7	3	2	18	17	7	22	45	5·00	12	5·9
8	3	28	21	18	7	48	47	6·00	17	11·8
9	3	54	24	19	8	14	50	7·00	24	5·7
10	4	20	26	20	8	40	53	8·00	31	11·6

RADIUS = 67 CHAINS.—B D = 4·005 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	25	39	11	4	42	12	0·50	0	1·5
2	0	51	19	12	5	7	52	0·75	0	3·3
3	1	16	58	13	5	33	31	1·00	0	5·9
4	1	42	37	14	5	59	10	2·00	1	11·6
5	2	8	16	15	6	24	49	3·00	4	5·1
6	2	33	56	16	6	50	29	4·00	7	10·6
7	2	59	35	17	7	16	8	5·00	12	3·7
8	3	25	14	18	7	41	47	6·00	17	8·6
9	3	50	54	19	8	7	27	7·00	24	1·3
10	4	16	33	20	8	33	6	8·00	31	5·8

RADIUS = 68 CHAINS.—B D = 4·005 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	25	17	11	4	38	3	0·50	0	1·4
2	0	50	33	12	5	3	20	0·75	0	3·2
3	1	15	50	13	5	28	37	1·00	0	5·8
4	1	41	7	14	5	53	53	2·00	1	11·2
5	2	6	23	15	6	19	10	3·00	4	4·4
6	2	31	40	16	6	44	27	4·00	7	9·1
7	2	56	57	17	7	9	43	5·00	12	1·5
8	3	22	13	18	7	35	0	6·00	17	5·5
9	3	47	30	19	8	0	17	7·00	23	9·1
10	4	12	47	20	8	25	33	8·00	31	0·2

RADIUS = 69 CHAINS.—B D = 4·004 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	24	55	11	4	34	1	0·50	0	1·4
2	0	49	49	12	4	58	56	0·75	0	3·2
3	1	14	44	13	5	23	51	1·00	0	5·7
4	1	39	39	14	5	48	46	2·00	1	11·0
5	2	4	33	15	6	13	40	3·00	4	3·6
6	2	29	28	16	6	38	35	4·00	7	7·8
7	2	54	23	17	7	3	30	5·00	11	11·4
8	3	19	17	18	7	28	24	6·00	17	2·5
9	3	44	12	19	7	53	19	7·00	23	5·0
10	4	9	7	20	8	18	14	8·00	30	6·8

RADIUS = 70 CHAINS.—B D = 4·004 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	24	33	11	4	30	7	0·50	0	1·4
2	0	49	7	12	4	54	40	0·75	0	3·2
3	1	13	40	13	5	19	13	1·00	0	5·6
4	1	38	13	14	5	43	47	2·00	1	10·6
5	2	2	47	15	6	8	20	3·00	4	2·9
6	2	27	20	16	6	32	53	4·00	7	6·4
7	2	51	53	17	6	57	27	5·00	11	9·4
8	3	16	27	18	7	22	0	6·00	16	11·5
9	3	41	0	19	7	46	33	7·00	23	1·1
10	4	5	33	20	8	11	7	8·00	30	1·8

RADIUS = 71 CHAINS.—B D = 4·004 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	″	″		ft.	ins.
1	0	24	13	11	4	26	18	0·50	0	1·4
2	0	48	25	12	4	50	31	0·75	0	3·1
3	1	12	38	13	5	14	44	1·00	0	5·5
4	1	36	50	14	5	38	56	2·00	1	10·3
5	2	1	3	15	6	3	9	3·00	4	2·2
6	2	25	15	16	6	27	21	4·00	7	5·2
7	2	49	28	17	6	51	34	5·00	11	7·4
8	3	13	41	18	7	15	46	6·00	16	8·7
9	3	37	53	19	7	39	59	7·00	22	9·1
10	4	2	6	20	8	4	12	8·00	29	8·5

RADIUS = 72 CHAINS.—B D = 4·004 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	23	52	11	4	22	33	0·50	0	1·4
2	0	47	44	12	4	46	25	0·75	0	3·1
3	1	11	36	13	5	10	17	1·00	0	5·4
4	1	35	28	14	5	34	9	2·00	1	10·0
5	1	59	20	15	5	58	1	3·00	4	1·5
6	2	23	12	16	6	21	53	4·00	7	3·9
7	2	47	4	17	6	45	45	5·00	11	5·4
8	3	10	56	18	7	9	37	6·00	16	5·8
9	3	34	48	19	7	33	29	7·00	22	5·2
10	3	58	40	20	7	57	20	8·00	29	3·6

RADIUS = 73 CHAINS.—B D = 4·004 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	23	33	11	4	19	1	0·50	0	1·3
2	0	47	6	12	4	42	33	0·75	0	3·0
3	1	10	38	13	5	6	6	1·00	0	5·4
4	1	34	11	14	5	29	39	2·00	1	9·7
5	1	57	44	15	5	53	12	3·00	4	0·8
6	2	21	17	16	6	16	44	4·00	7	2·8
7	2	44	49	17	6	40	17	5·00	11	3·7
8	3	8	22	18	7	3	50	6·00	16	3·3
9	3	31	55	19	7	27	23	7·00	22	1·7
10	3	55	28	20	7	50	56	8·00	28	11·0

RADIUS = 74 CHAINS.—B D = 4·004 Ch^s.

Ch^s.	Angle β.			Ch.^{s}	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	23	14	11	4	15	31	0·50	0	1·3
2	0	46	27	12	4	38	44	0·75	0	3·0
3	1	9	41	13	5	1	58	1·00	0	5·3
4	1	32	55	14	5	25	12	2·00	1	9·4
5	1	56	8	15	5	48	25	3·00	4	0·1
6	2	19	22	16	6	11	39	4·00	7	1·6
7	2	42	36	17	6	34	53	5·00	11	1·7
8	3	5	50	18	6	58	6	6·00	16	0·4
9	3	29	3	19	7	21	20	7·00	21	10·0
10	3	52	17	20	7	44	34	8·00	28	6·1

RADIUS = 75 CHAINS.—BD = 4·004 Chs.

Chs.	Angle β. °	′	″	Chs.	Angle β. °	′	″	Chains.	Offset. ft.	ins.
1	0	22	55	11	4	12	6	0·50	0	1·3
2	0	45	50	12	4	35	1	0·75	0	2·9
3	1	8	45	13	4	57	56	1·00	0	5·2
4	1	31	40	14	5	20	52	2·00	1	9·2
5	1	54	36	15	5	43	47	3·00	3	11·5
6	2	17	31	16	6	6	42	4·00	7	0·4
7	2	40	26	17	6	29	37	5·00	10	11·8
8	3	3	21	18	6	52	32	6·00	15	10·0
9	3	26	16	19	7	15	27	7·00	21	6·5
10	3	49	21	20	7	38	22	8·00	28	1·6

RADIUS = 76 CHAINS.—BD = 4·004 Chs.

Chs.	Angle β. °	′	″	Chs.	Angle β. °	′	″	Chains.	Offset. ft.	ins.
1	0	22	37	11	4	8	47	0·50	0	1·3
2	0	45	14	12	4	31	24	0·75	0	2·9
3	1	7	51	13	4	54	1	1·00	0	5·2
4	1	30	28	14	5	16	38	2·00	1	8·8
5	1	53	5	15	5	39	15	3·00	3	10·9
6	2	15	42	16	6	1	52	4·00	6	11·3
7	2	38	19	17	6	24	29	5·00	10	10·1
8	3	0	56	18	6	47	6	6·00	15	7·4
9	3	23	33	19	7	9	43	7·00	21	3·0
10	3	46	10	20	7	32	20	8·00	27	9·0

RADIUS = 77 CHAINS.—B D = 4·004 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	22	19	11	4	5	33	0·50	0	1·3
2	0	44	39	12	4	27	53	0·75	0	2·8
3	1	6	58	13	4	50	12	1·00	0	5·1
4	1	29	18	14	5	12	31	2·00	1	8·6
5	1	51	37	15	5	34	51	3·00	3	10·2
6	2	13	56	16	5	57	10	4·00	6	10·3
7	2	36	16	17	6	19	30	5·00	10	8·6
8	2	58	35	18	6	41	49	6·00	15	5·0
9	3	20	55	19	7	4	8	7·00	20	11·8
10	3	43	14	20	7	26	28	8·00	27	4·8

RADIUS = 78 CHAINS.—B D = 4·004 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	22	2	11	4	2	24	0·50	0	1·3
2	0	44	4	12	4	24	27	0·75	0	2·8
3	1	6	7	13	4	46	29	1·00	0	5·1
4	1	28	9	14	5	8	31	2·00	1	8·3
5	1	50	11	15	5	30	33	3·00	3	9·7
6	2	12	13	16	5	52	36	4·00	6	9·2
7	2	34	16	17	6	14	38	5·00	10	6·9
8	2	56	18	18	6	36	40	6·00	15	2·6
9	3	18	20	19	6	58	42	7·00	20	8·6
10	3	40	22	20	7	20	44	8·00	27	0·6

RADIUS = 79 CHAINS.—BD = 4

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	f
	°	′	″		°	′	″		
1	0	21	45	11	3	59	20	0·50	
2	0	43	31	12	4	21	6	0·75	
3	1	5	16	13	4	42	51	1·00	
4	1	27	2	14	5	4	37	2·00	
5	1	48	47	15	5	26	22	3·00	
6	2	10	33	16	5	48	8	4·00	
7	2	32	18	17	6	9	53	5·00	1
8	2	54	4	18	6	31	39	6·00	1
9	3	15	49	19	6	53	24	7·00	2
10	3	37	35	20	7	15	10	8·00	2

RADIUS = 80 CHAINS.—BD = 4

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	f
	°	′	″		°	′	″		
1	0	21	29	11	3	56	21	0·50	
2	0	42	58	12	4	17	50	0·75	
3	1	4	27	13	4	39	19	1·00	
4	1	25	57	14	5	0	48	2·00	
5	1	47	26	15	5	22	17	3·00	
6	2	8	55	16	5	43	47	4·00	
7	2	30	24	17	6	5	16	5·00	1
8	2	51	53	18	6	26	45	6·00	1
9	3	13	22	19	6	48	14	7·00	2
10	3	34	52	20	7	9	43	8·00	2

RADIUS = 145 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	11	51	11	2	10	24	0·75	0	1·5
2	0	23	43	12	2	22	15	1·00	0	2·7
3	0	35	34	13	2	34	7	2·00	0	10·9
4	0	47	25	14	2	45	58	3·00	2	0·5
5	0	59	16	15	2	57	49	4·00	3	7·7
6	1	11	8	16	3	9	40	5·00	5	8·2
7	1	22	59	17	3	21	32	6·00	8	2·3
8	1	34	50	18	3	33	23	7·00	11	1·8
9	1	46	41	19	3	45	14	8·00	14	6·7
10	1	58	33	20	3	57	5	9·00	18	5·1

RADIUS = 150 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	11	28	11	2	6	3	0·75	0	1·5
2	0	22	55	12	2	17	31	1·00	0	2·6
3	0	34	23	13	2	28	58	2·00	0	10·5
4	0	45	50	14	2	40	26	3·00	1	11·8
5	0	57	18	15	2	51	53	4·00	3	6·2
6	1	8	45	16	3	3	21	5·00	5	5·9
7	1	20	13	17	3	14	48	6·00	7	11·0
8	1	31	40	18	3	26	16	7·00	10	9·3
9	1	43	8	19	3	37	43	8·00	14	0·9
10	1	54	35	20	3	49	11	9·00	17	9·8

RADIUS = 95 CHAINS.—B D = 4·002 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	18	6	11	3	19	2	0·50	0	1·0
2	0	36	11	12	3	37	7	0·75	0	2·3
3	0	54	17	13	3	55	13	1·00	0	4·2
4	1	12	22	14	4	13	19	2·00	1	4·6
5	1	30	28	15	4	31	24	3·00	3	1·5
6	1	48	34	16	4	49	30	4·00	5	6·7
7	2	6	39	17	5	7	36	5·00	8	8·2
8	2	24	45	18	5	25	41	6·00	12	6·0
9	2	42	50	19	5	43	47	7·00	16	10·1
10	3	0	56	20	6	1	52	8·00	22	2·7

RADIUS = 100 CHAINS.—B D = 4·503 Ch^s.

Ch.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	17	11	11	3	9	5	0·75	0	2·2
2	0	34	23	12	3	26	16	1·00	0	4·0
3	0	51	34	13	3	43	28	2·00	1	3·8
4	1	8	45	14	4	0	39	3·00	2	11·6
5	1	25	57	15	4	17	50	4·00	5	3·4
6	1	43	8	16	4	35	2	5·00	8	3·0
7	2	0	19	17	4	52	13	6·00	11	10·7
8	2	17	31	18	5	9	24	7·00	16	2·0
9	2	34	42	19	5	26	36	8·00	21	1·2
10	2	51	53	20	5	43	47	9·00	26	8·4

RADIUS = 105 CHAINS.—B D = 4·503 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	16	22	11	3	0	7	0·75	0	2·1
2	0	32	45	12	3	16	29	1·00	0	3·8
3	0	49	7	13	3	32	52	2·00	1	3·0
4	1	5	30	14	3	49	14	3·00	2	9·9
5	1	21	52	15	4	5	37	4·00	5	0·3
6	1	38	15	16	4	21	59	5·00	7	10·2
7	1	54	37	17	4	38	21	6·00	11	3·7
8	2	11	0	18	4	54	44	7·00	15	4·7
9	2	27	22	19	5	11	6	8·00	20	1·2
10	2	43	44	20	5	27	29	9·00	25	5·4

RADIUS = 110 CHAINS.—B D = 4·502 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	15	38	11	2	51	53	0·75	0	2·0
2	0	31	15	12	3	7	31	1·00	0	3·6
3	0	46	53	13	3	23	8	2·00	1	2·4
4	1	2	30	14	3	38	46	3·00	2	8·4
5	1	18	8	15	3	54	23	4·00	4	9·6
6	1	33	45	16	4	10	1	5·00	7	5·8
7	1	49	23	17	4	25	39	6·00	10	9·4
8	2	5	0	18	4	41	16	7·00	14	8·2
9	2	20	38	19	4	56	54	8·00	19	2·2
10	2	36	16	20	5	12	31	9·00	24	3·3

RADIUS = 115 CHAINS.—B D = 4·502 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	14	57	11	2	44	25	0·75	0	1·9
2	0	29	54	12	2	59	22	1·00	0	3·4
3	0	44	50	13	3	14	19	2·00	1	1·8
4	0	59	47	14	3	29	15	3·00	2	7·0
5	1	14	44	15	3	44	12	4·00	4	7·0
6	1	29	41	16	3	59	9	5·00	7	2·1
7	1	44	38	17	4	14	6	6·00	10	3·9
8	1	59	34	18	4	29	3	7·00	14	0·7
9	2	14	31	19	4	43	59	8·00	18	4·2
10	2	29	28	20	4	58	56	9·00	23	2·8

RADIUS = 120 CHAINS.—B D = 4·502 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	14	19	11	2	37	34	0·75	0	1·8
2	0	28	39	12	2	51	53	1·00	0	3·2
3	0	42	58	13	3	6	13	2·00	1	1·1
4	0	57	18	14	3	20	32	3·00	2	5·6
5	1	11	37	15	3	34	52	4·00	4	4·7
6	1	25	57	16	3	49	11	5·00	6	10·4
7	1	40	16	17	4	3	30	6·00	9	10·7
8	1	54	36	18	4	17	50	7·00	13	5·6
9	2	8	55	19	4	32	9	8·00	17	6·9
10	2	23	14	20	4	46	29	9·00	22	3·1

RADIUS = 125 CHAINS.—B D = 4·502 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	13	46	11	2	31	22	0·75	0	1·7
2	0	27	31	12	2	45	7	1·00	0	3·2
3	0	41	17	13	2	58	53	2·00	1	0·7
4	0	55	2	14	3	12	38	3·00	2	4·5
5	1	8	48	15	3	26	24	4·00	4	2·7
6	1	22	34	16	3	40	10	5·00	6	7·2
7	1	36	19	17	3	53	55	6·00	9	6·1
8	1	50	5	18	4	7	41	7·00	12	11·3
9	2	3	50	19	4	21	26	8·00	16	10·8
10	2	17	36	20	4	35	12	9·00	21	4·6

RADIUS = 130 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	13	13	11	2	25	27	0·75	0	1·7
2	0	26	27	12	2	38	40	1·00	0	3·0
3	0	39	40	13	2	51	53	2·00	1	0·2
4	0	52	53	14	3	5	7	3·00	2	3·4
5	1	6	7	15	3	18	20	4·00	4	0·7
6	1	19	20	16	3	31	33	5·00	6	4·1
7	1	32	33	17	3	44	47	6·00	9	1·6
8	1	45	47	18	3	58	0	7·00	12	5·2
9	1	59	0	19	4	11	13	8·00	16	2·9
10	2	12	13	20	4	24	26	9·00	20	6·6

RADIUS = 135 CHAINS.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	12	44	11	2	20	3	0·75	0	1·6
2	0	25	28	12	2	32	47	1·00	0	2·9
3	0	38	12	13	2	45	31	2·00	0	11·7
4	0	50	56	14	2	58	15	3·00	2	2·3
5	1	3	40	15	3	10	59	4·00	3	10·9
6	1	16	24	16	3	23	43	5·00	6	1·3
7	1	29	8	17	3	36	27	6·00	8	9·6
8	1	41	52	18	3	49	11	7·00	11	11·6
9	1	54	35	19	4	1	55	8·00	15	7·7
10	2	7	19	20	4	14	39	9·00	19	9·5

RADIUS = 140 CHAINS.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	12	17	11	2	15	3	0·75	0	1·6
2	0	24	33	12	2	27	20	1·00	0	2·8
3	0	36	50	13	2	39	37	2·00	0	11·3
4	0	49	7	14	2	51	53	3·00	2	1·4
5	1	1	23	15	3	4	10	4·00	3	9·2
6	1	13	40	16	3	16	27	5·00	5	10·7
7	1	25	57	17	3	28	43	6·00	8	6·0
8	1	38	13	18	3	41	0	7·00	11	6·5
9	1	50	30	19	3	53	17	8·00	15	0·9
10	2	2	47	20	4	5	33	9·00	19	1·0

RADIUS = 145 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	11	51	11	2	10	24	0·75	0	1·5
2	0	23	43	12	2	22	15	1·00	0	2·7
3	0	35	34	13	2	34	7	2·00	0	10·9
4	0	47	25	14	2	45	58	3·00	2	0·5
5	0	59	16	15	2	57	49	4·00	3	7·7
6	1	11	8	16	3	9	40	5·00	5	8·2
7	1	22	59	17	3	21	32	6·00	8	2·3
8	1	34	50	18	3	33	23	7·00	11	1·8
9	1	46	41	19	3	45	14	8·00	14	6·7
10	1	58	33	20	3	57	5	9·00	18	5·1

RADIUS = 150 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	11	28	11	2	6	3	0·75	0	1·5
2	0	22	55	12	2	17	31	1·00	0	2·6
3	0	34	23	13	2	28	58	2·00	0	10·5
4	0	45	50	14	2	40	26	3·00	1	11·8
5	0	57	18	15	2	51	53	4·00	3	6·2
6	1	8	45	16	3	3	21	5·00	5	5·9
7	1	20	13	17	3	14	48	6·00	7	11·0
8	1	31	40	18	3	26	16	7·00	10	9·3
9	1	43	8	19	3	37	43	8·00	14	0·9
10	1	54	35	20	3	49	11	9·00	17	9·8

RADIUS = 155 CHAINS.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	11	5	11	2	1	59	0·75	0	1·4
2	0	22	11	12	2	13	5	1·00	0	2·5
3	0	33	16	13	2	24	10	2·00	0	10·2
4	0	44	22	14	2	35	15	3·00	1	10·9
5	0	55	27	15	2	46	21	4·00	3	4·8
6	1	6	32	16	2	57	26	5·00	5	3·8
7	1	17	38	17	3	8	31	6·00	7	7·9
8	1	28	43	18	3	19	37	7·00	10	5·1
9	1	39	48	19	3	30	42	8·00	13	7·3
10	1	50	54	20	3	41	48	9·00	17	2·9

RADIUS = 160 CHAINS.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	10	45	11	1	58	10	0·75	0	1·4
2	0	21	29	12	2	8	55	1·00	0	2·4
3	0	32	14	13	2	19	40	2·00	0	9·9
4	0	42	58	14	2	30	24	3·00	1	10·1
5	0	53	43	15	2	41	9	4·00	3	3·6
6	1	4	27	16	2	51	53	5·00	5	1·8
7	1	15	12	17	3	2	38	6·00	7	5·1
8	1	25	57	18	3	13	22	7·00	10	1·1
9	1	36	41	19	3	24	7	8·00	13	2·3
10	1	47	26	20	3	34	52	9·00	16	8·3

RADIUS = 165 CHAINS.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	10	25	11	1	54	36	0·75	0	1·3
2	0	20	50	12	2	5	1	1·00	0	2·4
3	0	31	15	13	2	15	26	2·00	0	9·6
4	0	41	40	14	2	25	51	3·00	1	9·6
5	0	52	5	15	2	36	16	4·00	3	2·4
6	1	2	30	16	2	46	41	5·00	4	11·9
7	1	12	55	17	2	57	6	6·00	7	2·4
8	1	23	20	18	3	7	31	7·00	9	9·6
9	1	33	45	19	3	17	56	8·00	12	9·6
10	1	44	10	20	3	28	21	9·00	16	2·2

RADIUS = 170 CHAINS.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	10	7	11	1	51	13	0·75	0	1·3
2	0	20	13	12	2	1	20	1·00	0	2·3
3	0	30	20	13	2	11	27	2·00	0	9·3
4	0	40	27	14	2	21	33	3·00	1	9·0
5	0	50	33	15	2	31	40	4·00	3	1·2
6	1	0	40	16	2	41	47	5·00	4	10·2
7	1	10	47	17	2	51	53	6·00	6	11·9
8	1	20	53	18	3	2	0	7·00	9	6·2
9	1	31	0	19	3	12	7	8·00	12	5·1
10	1	41	7	20	3	22	13	9·00	15	8·5

RADIUS = **175 CHAINS**.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	9	49	11	1	48	3	0·75	0	1·3
2	0	19	39	12	1	57	52	1·00	0	2·2
3	0	29	28	13	2	7	41	2·00	0	9·0
4	0	39	17	14	2	17	31	3·00	1	8·3
5	0	49	7	15	2	27	20	4·00	3	0·2
6	0	58	56	16	2	37	9	5·00	4	8·5
7	1	8	45	17	2	46	59	6·00	6	9·5
8	1	18	35	18	2	56	48	7·00	9	2·9
9	1	28	24	19	3	6	37	8·00	12	0·8
10	1	38	13	20	3	16	27	9·00	15	3·4

RADIUS = **180 CHAINS**.—B D = 4·501 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	9	33	11	1	45	3	0·75	0	1·3
2	0	19	6	12	1	54	36	1·00	0	2·2
3	0	28	39	13	2	4	8	2·00	0	8·8
4	0	38	12	14	2	13	41	3·00	1	7·8
5	0	47	45	15	2	23	14	4·00	2	11·1
6	0	57	18	16	2	32	47	5·00	4	6·9
7	1	6	51	17	2	42	20	6·00	6	7·2
8	1	16	24	18	2	51	53	7·00	8	11·8
9	1	25	57	19	3	1	26	8·00	11	8·7
10	1	35	30	20	3	10	59	9·00	14	10·1

RADIUS = 185 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	9	17	11	1	42	12	0·75	0	1·2
2	0	18	35	12	1	51	30	1·00	0	2·1
3	0	27	52	13	2	0	47	2·00	0	8·5
4	0	37	10	14	2	10	5	3·00	1	7·2
5	0	46	27	15	2	19	22	4·00	2	10·2
6	0	55	45	16	2	28	40	5·00	4	5·4
7	1	5	2	17	2	37	57	6·00	6	5·0
8	1	14	20	18	2	47	14	7·00	8	8·8
9	1	23	37	19	2	56	32	8·00	11	5·0
10	1	32	55	20	3	5	49	9·00	14	5·3

RADIUS = 190 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	9	3	11	1	39	31	0·75	0	1·2
2	0	18	6	12	1	48	34	1·00	0	2·1
3	0	27	8	13	1	57	36	2·00	0	8·3
4	0	36	11	14	2	6	39	3·00	1	6·8
5	0	45	14	15	2	15	42	4·00	2	9·4
6	0	54	17	16	2	24	45	5·00	4	4·0
7	1	3	20	17	2	33	48	6·00	6	3·1
8	1	12	22	18	2	42	50	7·00	8	6·3
9	1	21	25	19	2	51	53	8·00	11	1·5
10	1	30	28	20	3	0	56	9·00	14	0·7

RADIUS = 195 CHAINS.—BD = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	″	″		ft.	ins.
1	0	8	49	11	1	36	58	0·75	0	1·2
2	0	17	38	12	1	45	47	1·00	0	2·1
3	0	26	27	13	1	54	35	2·00	0	8·1
4	0	35	16	14	2	3	24	3·00	1	6·3
5	0	44	4	15	2	12	13	4·00	2	8·4
6	0	52	53	16	2	21	2	5·00	4	2·8
7	1	1	42	17	2	29	51	6·00	6	1·2
8	1	10	31	18	2	38	40	7·00	8	3·4
9	1	19	20	19	2	47	29	8·00	10	9·9
10	1	28	9	20	2	56	18	9·00	13	8·4

RADIUS = 200 CHAINS.—BD = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	8	36	11	1	34	32	0·75	0	1·1
2	0	17	11	12	1	43	8	1·00	0	2·0
3	0	25	47	13	1	51	44	2·00	0	7·9
4	0	34	23	14	2	0	19	3·00	1	5·8
5	0	42	58	15	2	8	55	4·00	2	7·7
6	0	51	34	16	2	17	31	5·00	4	1·5
7	1	0	10	17	2	26	6	6·00	5	11·1
8	1	8	45	18	2	34	42	7·00	8	0·9
9	1	17	21	19	2	43	18	8·00	10	6·6
10	1	25	57	20	2	51	53	9·00	13	4·2

RADIUS = 205 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	8	23	11	1	32	14	0·75	0	1·0
2	0	16	46	12	1	40	37	1·00	0	1·9
3	0	25	9	13	1	49	0	2·00	0	7·7
4	0	33	32	14	1	57	23	3·00	1	5·3
5	0	41	55	15	2	5	46	4·00	2	6·8
6	0	50	18	16	2	14	9	5·00	4	0·1
7	0	58	42	17	2	22	32	6·00	5	9·3
8	1	7	5	18	2	30	55	7·00	7	10·7
9	1	15	28	19	2	39	19	8·00	10	3·5
10	1	23	51	20	2	47	42	9·00	13	0·6

RADIUS = 210 CHAINS.—B D = 4·501 Chs.

Chs.	Angle β.			Ch.s	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	8	11	11	1	30	2	0·75	0	1·0
2	0	16	22	12	1	38	13	1·00	0	1·9
3	0	24	33	13	1	46	24	2·00	0	7·5
4	0	32	44	14	1	54	36	3·00	1	4·9
5	0	40	56	15	2	2	47	4·00	2	6·2
6	0	49	7	16	2	10	58	5·00	3	11·1
7	0	57	18	17	2	19	9	6·00	5	7·9
8	1	5	29	18	2	27	20	7·00	7	8·3
9	1	13	40	19	2	35	31	8·00	10	0·5
10	1	21	51	20	2	43	42	9·00	12	8·7

RADIUS = 215 CHAINS.—B D = 5·001 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	8	0	11	1	27	57	1·00	0	1·8
2	0	15	59	12	1	35	56	2·00	0	7·4
3	0	23	59	13	1	43	56	3·00	1	4·5
4	0	31	59	14	1	51	56	4·00	2	5·4
5	0	39	58	15	1	59	55	5·00	3	10·0
6	0	47	58	16	2	7	55	6·00	5	6·2
7	0	55	58	17	2	15	55	7·00	7	6·1
8	1	3	58	18	2	23	54	8·00	9	9·8
9	1	11	57	19	2	31	54	9·00	12	5·1
10	1	19	57	20	2	39	54	10·00	15	4·2

RADIUS = 220 CHAINS.—B D = 5·001 Chs.

Chs.	Angle β.			Chs.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	7	49	11	1	25	57	1·00	0	1·8
2	0	15	38	12	1	33	45	2·00	0	7·2
3	0	23	26	13	1	41	34	3·00	1	4·1
4	0	31	15	14	1	49	23	4·00	2	4·7
5	0	39	4	15	1	57	12	5·00	3	9·0
6	0	46	53	16	2	5	0	6·00	5	4·8
7	0	54	41	17	2	12	49	7·00	7	4·5
8	1	2	30	18	2	20	38	8·00	9	7·1
9	1	10	19	19	2	28	27	9·00	12	1·7
10	1	18	8	20	2	36	16	10·00	15	0·0

RADIUS = **225 CHAINS.**—BD = 5·001 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	″	″		ft.	ins.
1	0	7	38	11	1	24	2	1·00	0	1·7
2	0	15	17	12	1	31	40	2·00	0	7·0
3	0	22	55	13	1	39	19	3·00	1	3·8
4	0	30	33	14	1	46	57	4·00	2	4·1
5	0	38	12	15	1	54	35	5·00	3	7·9
6	0	45	50	16	2	2	14	6·00	5	3·4
7	0	53	29	17	2	9	52	7·00	7	2·1
8	1	1	7	18	2	17	30	8·00	9	4·6
9	1	8	45	19	2	25	9	9·00	11	10·5
10	1	16	24	20	2	32	47	10·00	14	8·0

RADIUS = **230 CHAINS.**—BD = 5·001 Ch^s.

Ch^s.	Angle β.			Ch^s.	Angle β.			Chains.	Offset.	
	°	′	″		°	′	″		ft.	ins.
1	0	7	28	11	1	22	12	1·00	0	1·7
2	0	14	57	12	1	29	41	2·00	0	6·9
3	0	22	25	13	1	37	9	3·00	1	3·7
4	0	29	54	14	1	44	38	4·00	2	3·6
5	0	37	22	15	1	52	6	5·00	3	7·0
6	0	44	50	16	1	59	34	6·00	5	1·9
7	0	52	19	17	2	7	3	7·00	7	0·1
8	0	59	47	18	2	14	31	8·00	9	2·0
9	1	7	16	19	2	22	0	9·00	11	7·4
10	1	14	44	20	2	29	28	10·00	14	4·0